
Digital Preservation Standards USING ISO 16363 FOR ASSESSMENT

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- **DIGITAL PRESERVATION**
- **STANDARDS**
- **ASSESSMENT VS. AUDIT**
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This presentation offers an extremely brief overview of the concept of digital preservation, an equally brief overview of two of the standards employed by digital preservationists to create frameworks and guide development and assessment of systems they manage. It also covers the difference between assessments and audits, and why and how ISO standard 16363 can be used to assess your digital preservation program.

Digital PRESERVATION

Digital preservation is a function of digital curation, in which digital content is prepared and actively managed for long-term access. Digital content requires constant, active management. At the most basic level, this includes managing multiple copies in different geographic locations, ongoing and consistent comparison of the same files in multiple locations to ensure that no changes have occurred to them (this is called fixity checking) and performing healing procedures when files no longer match up, and maintaining audit logs from the time of ingest into the archival system that tracks all activities, like access and changes to the files over time.

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Digital preservation is the active management of digital content over time to ensure ongoing access.
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Here's a simple definition of the to concept of digital preservation. Again, you'll see the mention of "active management." Digital content can't be left on external hard drives that are stored in a closet. Hard drives degrade, computers crash, CDs and DVDs aren't as stable as we once thought. We need to constantly move or manage our digital content redundantly on multiple servers to keep them safe. But digital preservation is not just about technical management. It is also an ecosystem of organization, administration, resources, and people who are keeping these technologies and the tools and services performed in the cause of digital preservation active.

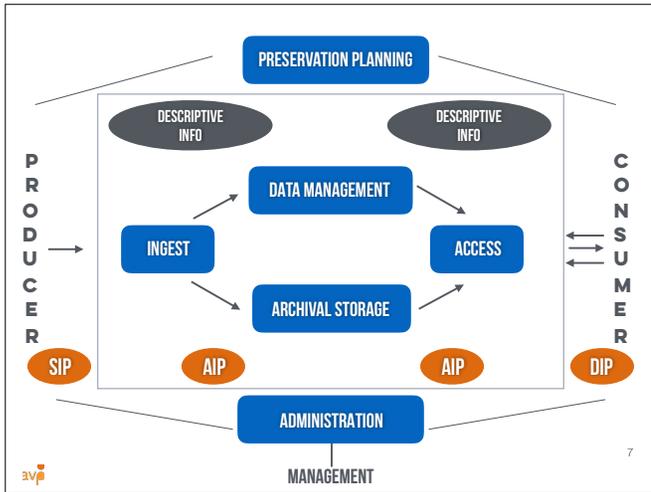
Standards

This leads to standards. Standards are key to guiding our practice, ensuring that we're all working in the same way and towards the same goals. Standards mean we're aligning our practice so that, while our day-to-day work may be specific to an institution's organizational structure and needs, each organization is using the same frameworks and strategies to manage and assess the systems we use.

ISO 14721:2012

**Open archival information system
(OAIS) – Reference model**

The standard that is probably most often discussed in reference to digital preservation is the Open Archival Information System reference model. It is a conceptual framework for an archival system dedicated to preserving and maintaining access to digital information over the long term. It describes the environment in which an archive resides, the functional components of the archive itself, and the information infrastructure supporting the archive's processes.



The Open Archival Information System, usually referred to as the OAIS model, is a reference model that has been widely accepted by the digital preservation community as a key standard for digital repositories. The OAIS model is a framework for how digital assets should be preserved from the moment digital material is ingested into the digital storage system, through subsequent preservation strategies to the creation of a dissemination package for the end user. It was adopted as an ISO standard in 2003 (ISO 14721:2003 OAIS) and reviewed and updated again in 2012. It is currently under review with revisions expected in 2017.

ISO 16363:2012
Audit and certification of trustworthy digital repositories

Another important standard in the digital preservation community is ISO 16363 – The Audit and certification of trustworthy digital repositories. The main purpose of this document is to define a Recommended Practice on which to base an audit and certification process for trustworthiness of digital repositories.

“A trusted digital repository is one whose mission is to provide reliable, long-term access to managed digital resources to its designated community, now and in the future”



[HTTP://WWW.DIGITALPRESERVATION.GOV/ABOUT/](http://www.digitalpreservation.gov/about/)

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The standard outlines, in very specific terms, the organizational and technical requirements that a repository (in the OAIS sense) needs to implement to be considered truly “trustworthy.”

- 1 ORGANIZATIONAL INFRASTRUCTURE = 25
- 2 DIGITAL OBJECT MANAGEMENT = 60
- 3 INFORMATION AND SECURITY RISK MANAGEMENT = 24



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The standard is broken into three sections: Organizational Structure, Digital Object Management, and Information and Security Risk Management. Each section is comprised of specific metrics — that number is on the right — that describe the characteristics of the TDR.

3.1.2.1 The repository shall have an appropriate succession plan, contingency plans, and/or escrow arrangements in place in case the repository ceases to operate or the governing or funding institution substantially changes its scope.

Supporting Text

This is necessary in order to preserve the information content entrusted to the repository by handing it on to another custodian in the case that the repository ceases to operate.

Examples of Ways the Repository Can Demonstrate It Is Meeting This Requirement

Written and credible succession and contingency plan(s); explicit and specific statement documenting the intent to ensure continuity of the repository, and the steps taken and to be taken to ensure continuity; escrow of critical code, software, and metadata sufficient to enable reconstitution of the repository and its content in the event of repository failure; escrow and/or reserve funds set aside for contingencies; explicit agreements with successor organizations documenting the measures to be taken to ensure the complete and formal transfer of responsibility for the repository's digital content and related assets, and granting the requisite rights necessary to ensure continuity of the content and repository services.

Discussion

A repository's failure threatens the long-term sustainability of a repository's information content. It is not sufficient for the repository to have an informal plan or policy regarding where its data goes should a failure occur. A formal plan with identified procedures needs to be in place.

This is an example of what one metric from the organizational infrastructure section looks like. Each metric has a statement (at the top, highlighted in yellow), Supporting text to explain it further, examples of how the repository can demonstrate it is meeting the requirement, and a further discussion.

109 METRICS

There are 109 metrics in all that a repository is assessed against. It is complex, time consuming to undertake, and some of the metrics can be really challenging to understand and address. Even so, the ISO 16363 standard is powerful as a repository assessment tool.

I've used "assessment" and "audit" in the context of ISO 16363. What's the difference and why might one be used over the other with ISO 16363?



An audit is a review of a system, in this case a digital repository, to ensure compliance. The outcome of an audit is binary — either you pass or fail — either you are trusted or not. The 109 metrics must be met in order to be certified as “trusted.” If you don’t meet them, you fail.



An assessment, on the other hand, looks at a digital repository to see how the the system is succeeding and where there are gaps. At AVPreserve, we've developed a measurement tool that considers each metric separately, and the outcome of each is scored on a scale from 0 to 4 based on readiness. We also prioritize when a metric needs to be addressed and how. Organizations get a sense of how they stand up to each metric, each category (such as “organizational infrastructure”), and the entire set of metrics—scored at each level to give a true sense of readiness, strengths, and gaps.

ISO 16363		Score	Timeframe	Priority
3.1.1	Mission Statement (preservation of, long term retention of, management of, and access to digital information)	3.00	Short	first
3.1.2	Preservation Strategic Plan	2.00	Short	first
3.1.3	Collection Policy	3.00	Short	first
3.3.1	Defined designated community	3.00	Short	first
4.2.6.1	Documented processes for acquiring PDI	3.00	Short	first
3.3.2	Preservation policies in place	3.00	Short	second
4.2.4.2	System of linking/resolution services in order to find uniquely identified object	3.00	Short	second
3.5.1.4	Policies that address liability and challenges to rights/ownership	3.00	Short	second
4.2.6.3	Ensure PDI is persistently associated with relevant CI	3.00	Short	second
5.1.1.6.2	Test and evaluate effect of changes to critical processes	3.00	Short	third
5.2.4	Written disaster preparedness and recovery plans	3.00	Short	third
4.3.1	Documented preservation strategies relevant to holdings	3.00	Medium	first
4.4.1	Specifications for how AIPs are stored down to the bit level	3.00	Medium	first
4.4.2.1	Procedures for all actions taken on AIPs	3.00	Medium	first
4.6.1	Comply with Access Policies	3.00	Medium	first

Here's the outcome of an actual assessment — this is a list of metrics that scored 3s (in yellow) and a 2 (in red). Beside each score is a timeframe (short, medium) and a priority (first, second, third) by which the metric should be addressed. That way, everything doesn't have to be a priority, and growth can happen in manageable chunks.

IDENTIFY GAPS IN PRACTICE

FIND OPPORTUNITIES FOR GROWTH

SPOTLIGHT STRENGTHS IN OUR APPROACHES TO
Trustworthy Digital Repository
MANAGEMENT

The outcome of an assessment isn't a pass/fail — it provides feedback for growth, identifies gaps in practice, and spotlights strengths. Each assessment, when repeated every 2–3 years, takes us a step closer to a TDR.

16363 ASSESSMENT

Assessments against ISO 16363 can be done internally or by an neutral, external party. Set aside a good chunk of time or seek assistance before undertaking an assessment — but definitely consider doing one! Wider adoption of 16363 standard as an assessment tool would, over time, move the digital preservation community and its repositories ever closer to the high bar of trustworthiness and compliance.

THANK YOU!

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